

1 ♂ 1 ♀, (J. B. Wallis); Winnipeg Beach, Man., June 19, 1909, 1 ♀, (Wallis); Husavick, Man., Aug. 17, 1910, 1 ♀, (Wallis); Le Pas, Man., July 1, 1917, 1 ♂ 2 ♀'s, (Wallis); Hudson Bay Railway, various points from M214 to M332, July 7-19, 1917, 4 ♂'s 7 ♀'s, (Wallis); Nordegg, Alta., July 11-17, 1917, 5 ♂'s 17 ♀'s, (F. C. Whitehouse); Chemo Stream, Bradley, Me., July 27, 1891, 1 ♂, (F. L. Harvey); Whitefish Point, Chippewa Co., Mich., Aug. 4, 1916, 1 ♂; id., no date, 2 ♂'s, (A. F. Combs). Total 16 ♂'s, 34 ♀'s.

#### EXPLANATION OF PLATE X.

Fig. 1—*Somatochlora semicircularis* Selys, ♂ (legs and wings omitted); 1a, front view of head; 2b, abdominal appendages of ♂, dorsal view; 1c, same, lateral view; 1d, end segments of ♀, lateral view; 1e, same, ventral view (appendages omitted).

Figs. 2—2e, *Somatochlora incurvata*, n. sp., same parts in fig. 1-1e.

Figs. 3—3e, *Somatochlora forcipata* Scudd., same parts as in figs. 1-1e.

Figs. 4—4e, *Somatochlora kennedyi*, n. sp., same parts as in figs. 1-1e.

Figs. 5—5e, *Somatochlora franklini* Selys, same parts as in figs. 1-1e.

#### ZOROTYPUS HUBBARDI, A NEW SPECIES OF THE ORDER ZORAPTERA FROM THE UNITED STATES.

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For over two decades a very unusual termitophilous inquiline has remained unstudied in the National Collection in spite of its having been several times brought to the attention of men better fitted to publish upon it than myself. It seems wrong to neglect longer the recording of this interesting addition to our fauna, and especially the interesting notes made by Mr. H. G. Hubbard, the original discoverer of the species, and I have, therefore, decided to assume the responsibility for the new name here erected. In

my studies I have benefited greatly from advice and assistance from various of my office associates. At an opportune moment, just as I was studying the Hubbard material, there came to hand an additional lot of six specimens taken but a month previous by Mr. Snyder. This accession of fresh material proved of great value.

It was in 1895 that this insect was first discovered, Mr. Hubbard collecting material at Haw Creek, Florida, in March of that year. Specimens were taken in termite galleries in a decayed log, and field notes were made on their appearance and habits. Except for an extract published by T. E. Snyder, Bull. Bur. Ent., U. S. Dept. Agric., No. 94, part II, p. 71 (1915), these notes are still in manuscript. Deeming them well worth printing I here quote them in full:

"Termitophilous insects Haw Creek, Fla., March 4, 1895, (*Trichopsenus?* and a Thysanuran near *Campodea* imitating a young termite) found in galleries of *Termes flavipes*, small var., living in large, red rotten log in palmetto hammock. The *Campodea* lives in galleries not among the termites but in their immediate vicinity. It can only be distinguished from the immature termite by its longer legs and greater activity. It is very difficult to capture. I saw several, got only one in small vial of alcohol.

"March 26 from same log I took numerous specimens of the Thysanuron, but lost one vial and saved only a few specimens, one of which is mounted on a point, the rest in alcohol tube.

"May 16. I mounted in balsam on a slide two specimens, one on its back and one on its belly. The balsam clouded considerably."

The *Trichopsenus?* mentioned in the above quoted notes is a Staphylinid beetle.

Some time later, the exact date not known and of little importance, the above notes were rewritten by Mr. Hubbard in a more permanent form and show a change of opinion as to the probable identity of the species concerned. This recasted note is here copied in full:

"247 Termitophilous Psocid found with termites in large log in pine swampy hammock of Prairie Farm, Haw Creek, Fla.,

March 26, 1895. Several specimens in alcohol together with worker of the termite collected at the above date, also one specimen dry on triangle point, collected March 4, '95, from the same log. The resemblance to a young termite is perfect, especially in mature specimens like that mounted dry. The psocid is, however, much more active than the termite and very difficult to capture. Immature specimens were not rare, and I took a large number but lost most of them with the vial that contained them. The immature specimens inhabit the galleries of the termites, but are not so apt to be found among the termites themselves as in their immediate vicinity. No. 244 *Microcorytus testaceus* was taken from this log at the same time.

<sup>4</sup>Balsam slide with two specimens of the Psocid.

"In the spring of 1896 I visited this log and found the vial with specimens lost the previous year. These are in separate vial (alc) numbered 247<sup>a</sup>. The termites from this same collecting vial are in a separate vial and numbered 707."

The lost vial mentioned in this note has again been lost track of and its whereabouts is at the present time unknown.

The recently acquired material was taken in Florida by Mr. T. E. Snyder, who has kindly furnished the following field note regarding them:

"15290<sup>a</sup>. Miami Beach, Fla., April 10, 1918. Inquilines? With termite in decayed red mangrove log; with termite and in adjacent wood. Very much more active than the termite."

The above material, ten specimens in all, four from Hubbard and six from Snyder, forms the basis for the following description:

**Zorotypus hubbardi**, new species.

General habitus very like that of a termite. Entire insect beset with stout, inclined bristle-like hairs, those on the dorsal surface of the abdomen directed backwards and mostly arranged in two transverse rows on each segment, one post-mesial and one at the posterior margin. A few of these bristles towards the end of the abdomen are sometimes quite long, almost as long as the basal segment of the antenna, but for the most part they are less than one-half that long and those of the sides and especially on the venter of the abdomen are very small and short. These

bristly hairs are scattered over the entire insect, body and appendages, including even the palpi, those on the legs and other appendages smaller and shorter, some on the antennæ being somewhat longer and a few on the coxæ as long as or even longer than the average ones on the dorsum of the abdomen, but less stout.

Head from above about as long as broad, without a prominent nasus as common in wingless psocids. Antennæ thick and consisting of nine segments; basal segment large, the apical four-fifths swollen, the entire segment almost three times as long as the greatest width; second and third segments approximately a third narrower than the first and subequal in length, their combined length scarcely as much as that of the basal segment; fourth to ninth segments about the same thickness and length as the basal one, the fourth slightly shorter, and the ninth somewhat more pointed apically than the others. Mandibles subquadrate and heavily chitinized, with two major teeth and some smaller notches and with a few fine hairs on the outer side; between the mandibles and the antennæ is the clypeus, which is small and narrow, making the antennæ but little separated from the base of the mandibles; maxillæ large and well developed, from a side view forming no inconspicuous feature of the head in fresh material or specimens preserved in spirits, the tip pointed and chitinized and with several moderately long teeth and some short brush-like bristles; maxillary palpi consisting of five segments; basal segment short and generally inconspicuous, little longer than broad; second segment of about the same thickness as the basal one, thickening somewhat in about the apical two-thirds and about four times as long as the greatest width; third segment about as long as the second but a little thicker; fourth segment but little longer than the apical width, apically about as thick as the preceding segment but basally much narrowed, the tip concave; fifth and last segment noticeably longer than any of the preceding ones, nearly as long as third and fourth together, and somewhat thicker than any of the preceding ones, the margins very slightly rounded and the tip broadly rounded; labial palpi three-segmented, the basal two short and generally obscure and the apical one large and thick, being nearly as thick as the terminal segment of the maxillary palpi, and but a little shorter, the whole segment about three

times as long as the greatest width. Eyes wanting, two specimens on a slide in balsam showing pigmented lateral spots which may represent eye facets. Ocelli wanting.

Thorax well developed; pronotum from dorsal view about as long as broad, about as long as the meso- and metathorax combined, and very broadly rounded anteriorly and truncate posteriorly the sides very gently rounded and gradually convergent posteriorly where it is nearly a fourth narrower than anteriorly, the length about equal to the anterior width; mesonotum from above half as long as the pronotum and posteriorly broadly rounded, the sides straight and gradually divergent posteriorly, where the width is slightly greater than that of the posterior part of the pronotum; metanotum similar to the mesonotum in length and shape but a little broader.

Legs stout, coxæ very large and broad, being fully as broad as the femora; trochanters well developed, being of about the thickness of the apical tarsal segment and a little longer than broad; femora stout and decidedly swollen, about four times as long as broad and beset with small bristles except on the inner surface, which is naked, otherwise unarmed except the posterior ones; on the inferior caudal margin of which there are two black chitinized teeth, one at the basal and apical thirds; the hind femora are somewhat larger than the others and have eight or nine bristles on the lower margin in addition to the two larger chitinized teeth; tibiæ less than one-half as thick as their respective femora and of about the same length except the posterior ones, which are somewhat longer than the corresponding femora; the tibiæ are beset on every side by short bristles but are otherwise unarmed; the anterior ones on the anterior inferior margin with a series of a score or more bristles; tarsi consisting of two segments, the basal one triangular and very minute, the second one large, somewhat less thick than the tibiæ, about five or six times as long as broad and beset all over with short bristles which, like those on the tibiæ and femora, are not erect but considerably inclined. Claws two in number on each foot, slender, as long as the thickness of the terminal tarsal segment and abruptly curved at a right angle at about the basal fourth.

Abdomen but little flattened, from a dorsal view decidedly

broader mesially and apparently consists of seven dorsal segments in the female and eight in the male; apically there is a pair of short, thick, fleshy, unsegmented cerci, as thick as the basal segment of the antenna, a little longer than broad, apically moderately narrowly rounded and, like the rest of the insect, bearing bristly hairs, four or five at the tip being unusually long, the apical one being sometimes even as much as twice as long as the cercus itself; genitalia usually concealed, in alcoholic material some males have a somewhat chitinized compressed organ more or less exerted. A detailed study of the genital characters was scarcely possible with the material at hand.

Entire length from front of head to tip of abdomen two mm., of pronotum three-eighths mm.; of hind femora seven-twelfths mm.; antennæ one and one-third mm.

Described from a total of ten specimens; one male on card point, one female in alcohol and two specimens, probably male nymphs, in balsam on a slide, taken by H. G. Hubbard in galleries of *Leucotermes flavipes* Kol. at Haw Creek, Fla., on March 26, 1895; four males, one female and one mutilated specimen of doubtful sex, all in spirits, taken by T. E. Snyder, at Miami Beach, Fla., April 10, 1918, in galleries of a termite of a different genus and species than the above.

Type, male; allotype, female, from material taken by Snyder. These two specimens are preserved in a hermetically sealed tube of spirits.

Type U. S. N. M. Cat. No. 21835.

The above described species is related to *Zorotypus neotropicus* Silvestri from Costa Rica, but seems a little larger, and the proportionate length of the basal segment of the antenna is different and the number of setæ on the lower margin of the anterior tibiae appear to be greater. The description of *neotropicus* makes no mention of the two chitinized teeth on the inferior caudal margin of the posterior femora, a character present in *hubbardi* and one scarcely likely to have been overlooked by Silvestri, and thus presumably not present in the Costa Rican species.

The Order Zoraptera was established by Silvestri\* for the

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\*Bollet. Lab. Zool. Gen. Agr. Portici, vol. VII, p. 193-209, figs, I-XIII (1913.)

single genus *Zorotypus* containing three species, *guineensis* from Africa, *ceylonicus* from Ceylon and *javanicus* from Java. Excellent figures showing the general appearance and details of these interesting insects are given by the describer. Later\* the same writer described a new species from the New World, *Z. neotropicus* from Costa Rica. Melander and Brues, Key to the Families of North American Insects, Plate 2, Fig. 26, copy one of Silvestri's figures showing the general appearance of *Zorotypus*.

Silvestri compares the Zoraptera with the Isoptera and with the Blattidæ and mentions the Dermaptera in this relation, but did not seem to consider any possible relationship with the Psocidæ. Thus it seems somewhat odd that they should have been considered psocids by Mr. Hubbard and others. The rapidity of movement was probably responsible, as structurally little similarity to Corrodentia seems to exist. The presence of cerci, the situation of the antennæ near the base of the mandibles and especially the general appearance show a wide divergence from the psocid type but a near relationship to termites.

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## NEW NEARCTIC CRANE-FLIES (TIPULIDÆ, DIPTERA). PART VI.

BY CHARLES P. ALEXANDER, LAWRENCE, KANS.

### *Dicranomyia rhipidioides*, new species.

Antennæ black, moniliform; general coloration brownish yellow, the præscutum with three dark brown stripes; wings grayish with sparse brown spots and subhyaline drops; *Sc* short, cell *1st M*<sup>2</sup> closed, elongate.

*Male*.—Length about 5.2 mm.; wing 6.9 mm.

Rostrum and palpi dark brown. Antennæ black, the flagellar segments moniliform, subglobular. Head dark.

Thorax pale brownish yellow, the præscutum with three dark brown stripes, of which the median stripe is very broad, the lateral stripes narrow, continued backward so as to suffuse the scutal lobes; postnotum darker. Pleura light yellowish brown. Halteres

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\*Id, vol. X, p. 120 (1916.)  
November, 1918